

Computer Science		PAPER: II
Time: 3.10 Hours	(SUBJECTIVE TYPE)	Marks: 83

SECTION-I

2. Write short answers to any EIGHT (8) questions: (16)

(i) Define data integration.

Ans Data integration may be defined in such a way that in a database, information is coordinated from different files and operated on a single file. Logically, the information is centralized, physical data may be located on different devices, i.e., scattered around over on different locations, connected through data communication links.

(ii) Describe the basic purpose of using views.

Ans The purpose of using views is purely to keep the data safe and secure from un-authorized and illegal users.

(iii) Define composite key.

Ans Composite keys consist of more than one attributes and can be subdivided into simple attributes, e.g., address which can be subdivided into house number, street, city and country etc., which are simple attributes.

(iv) Who is database administrator?

Ans Database administrator:

A database administrator (DBA) has an important role in development of any database system. He is responsible for the designing, implementation, operation, management and maintenance of database system. Technical skills are required to understand the complexity of hardware and software. Diplomatic skills are important in communicating with users and determining their needs etc.

(v) State the importance of project planning.

Ans A proper schedule is laid down to accomplish a project planning. All the cost factors are taken into consideration, i.e.,

the salaries of team members, their logistics involved, other trivial expenses (such as marriage gifts, insurances, etc.) and hardware costs.

(vi) What is relationship?

Ans Relationship:

A logical connection between different entities is called relationship. The relationship indicates how the entities are connected or related to each other. For example, a relationship of teaching exists between a STUDENT and TEACHER because teacher teaches the student. In ER diagram, a relationship is shown with diamond symbol.

(vii) What is homonym?

Ans Homonym:

A homonym is a type of problem that is created in relation when same name is used for two different attributes. Consider the following relations:

CUSTOMER (C_Name, Address, Phone)

COMPANY (C_Name, Products, Price)

The attribute C_Name is appearing in both relations. In 1st relation, it represents name of customer, and in 2nd relation, it represent name of company. It may create confusion. The solution is that unique attribute names must be used in all relations.

(viii) Describe the scroll bar.

Ans Scroll bar is used to move around the window if its contents do not fit on screen.

(ix) What is the use of field size property?

Ans Field size property is used to set the number of characters needed in a text or number field. The default field size for the text type is 50 characters.

(x) List any two uses of reports.

Ans Following are the two uses of reports:

1. Reports are used to retrieve and present data in a formatted way.
2. Some reports are simply a list of the records in the database, one record after the other.

(xi) State the objective of physical database design.

Ans The major objective of physical database design is to implement the database as a set of stored records, files, indexes and other data structures that will provide adequate performance and ensure database integrity, security and recoverability.

(xii) List two disadvantages of integrated development environment.

Ans Following are two disadvantages of integrated development environment

1. Some IDEs don't allow users to interact with the database directly.
2. IDEs are complicated tools. Maximizing their benefit will require time and patience.

C-Language

3. Write short answers to any EIGHT (8) questions: (16)

(i) What is object code?

Ans The code produced by a compiler from the source code, usually in the form of machine language that a computer can execute directly, or sometimes in assembly language.

(ii) What is the use of linker in C-Language?

Ans The linker combines different library files to the object file and produces an executable file with .exe extension.

(iii) Name two main categories of programming languages.

Ans The main two main categories of programming languages are as follows:

1. Low Level Languages
- (2) High Level Language

(iv) Write any two rules for naming variables.

Ans The two rules for naming variables are as follows:

1. C keywords cannot be used.
2. Blank spaces are not allowed.

(v) What happens when arithmetic underflow occurs?

Ans When arithmetic underflow occurs, the two very small numbers are manipulated. The result may be too small to be represented accurately, so it will be represented as zero.

(vi) What is standard input?

Ans Standard Input:

Key board is called standard input device and the input which is given through the keyboard is called the standard input.

(vii) Give one example of control string in printf function.

Ans

```
# include < stdio.h >
```

```
void main ( )
```

```
{
```

```
    int age, status;
```

```
    print f ("Enter the age:");
```

```
    scanf ("%d", & age);
```

```
    status = (age > 60);
```

```
    printf ("Status = %d", status);
```

```
}
```

(viii) Trace output:

```
int n = 6;
```

```
n ++;
```

```
printf ("%d", n);
```

Ans n = 7.

(ix) Trace error:

```
int x = 5;
```

```
int y
```

```
y = x + 3
```

```
printf ( " %d ", y );
```

Ans No semicolon is used at the end of instruction 2 and 3.

(x) Trace error:

```
Include <STDIO . H>
```

```
VOID Main ( );
```

```
{
```

```
printf ("Pakistan");
```

```
}
```

Ans (a) # include < stdio.h > // syntax Error

(b) void main () // syntax Error

(xi) Trace output:

```
int a = 512;
```

```
printf ( " a = % 5d", a );
```

```
printf ( " a = % 1d", a );
```

Ans 512512

(xii) Trace output:

```
Main ( )
```

```
{
```

```
printf ( " 55\t " );
```

```
printf ( " 5855 " );
```

Ans 55 5855

OR

(Visual Basic)

3. Write short answers to any EIGHT (8) questions: (16)

(i) What is object code?

Ans An object code in Visual Basic, is a combination of code and data can be treated as a unit. An object can be a piece of an application, like a control or a form.

(ii) Write any two form methods.

Ans Following are two form methods:

1. Hide Method 2. Show Method

(iii) Write any two rules for naming variables.

Ans Here are two rules for naming variables:

1. You must use a letter as the first character.
2. Name can't exceed 255 characters in length.

(iv) What are program development tools?

Ans Program development tools are used on the form window to develop an application. Program Development tools are such as buttons, check boxes, text boxes, etc.

(v) Name any two categories of programming languages.

Ans Following are two categories of programming languages:

1. Low level and High level.

2. Procedural and Event-oriented.

(vi) What happens when an arithmetic underflow occurs?

Ans When an arithmetic underflow occurs, the true result of a floating point operation is smaller in magnitude than the smallest value representable as a normal floating point number in the target datatype.

(vii) Write two application development steps.

Ans Following are two application development steps:

1. Create initial software package.
2. Load software onto the network module.

(viii) How do we attach code with form?

Ans We can attach code with form by adding to the click event of the menu option.

(ix) How do we pause the projects?

Ans To pause a running project:

Click on pause icon in the toolbar

'OR'

Select Break from Run menu

'OR'

Press ctrl + Break

(x) Write any two properties of form.

Ans Here are two properties of form:

1. BackColor
2. BorderStyle

(xi) How do we save a project in Visual Basic?

Ans The project is saved using the following command from the file menu:

Save Project

'OR'

Save Project As

The above command(s) is/are used to save a project for the first time or to save a copy of the project.

(xii) What is the use of command button control?

Ans Command button represents a click-able button on the form. It is used to start an action when it is clicked.

C-Language

4. Write short answers to any EIGHT (8) questions: (16)

(i) Define conditional operator? Write its syntax.

Ans Conditional operator in C-language is a powerful operator which can be used to implement if-then-else type of logic. This operator is also known as ternary operator. Its syntax is:
expression 1? expression 2: expression 3

(ii) What happens if break is missed in case block?

Ans If break is missed in case block, the code from the first true case down to the end of the switch statement will execute sequentially.

(iii) Predict the output of the following code:

```
if ( 4%2 == 0 )  
    printf ( " Programming makes the life interesting \n" );  
else  
    printf ( " Programming is difficult to learn" );
```

Ans Programming makes the life interesting.

(iv) Trace the errors:

```
int p = 20,  
if ( price == 20 )  
    price = 0;  
else  
    price = 2,
```

Ans No semicolon is used at the end of instructions 1 and last.

(v) Predict the output of the following piece of code:

```
int i = 1;  
while ( i <= 5 )  
{  
    printf ( "Pakistan" );  
    i ++;  
}
```

Ans PakistanPakistanPakistanPakistanPakistan

(vi) Convert the following loop in do-while loop:

```
for ( i = 3 ; i <= 39 ; i += 6 )  
{
```



```
printf ( "%d \n", i );
```

Ans

```
i = 3;  
do {  
    printf ( " %d\n", i);  
    i += 6;  
} while (i <= 39);
```

(vii) Define function body.

Ans

Variables declaration and the program logic are implemented in the function body. Function body makes use of the arguments passed to the function. It is enclosed in curly braces.

(viii) Define local variable.

Ans

All variables that we have declared so far have been declared within a block-- that is, within the extent of a pair of curly braces. These are called local variables and have local scope.

(ix) How is a file closed?

Ans

When a program has no further use of a file, it should close it with `fclose ()` library function. The syntax of `fclose ()` is as follows:

```
int fclose (FILE* f p)
```

Babulm OR **Babulm**

Visual Basic)

4. Write short answers to any EIGHT (8) questions: (16)

(i) In Visual Basic, how select case help you in coding?

Ans

Select case helps us in coding in such a way that it is manageable where one or two conditions are to be tested.

(ii) What is condition in VB?

Ans

The statements that are used to control the order of execution of statements in a program are called control statements. There are two types, of control statements, viz., conditional or unconditional. Thus, for the condition in V.B, we can say that the conditional control statement transfers the

control from one statement to another after evaluating a condition.

(iii) Write down the syntax of IF---THEN structure.

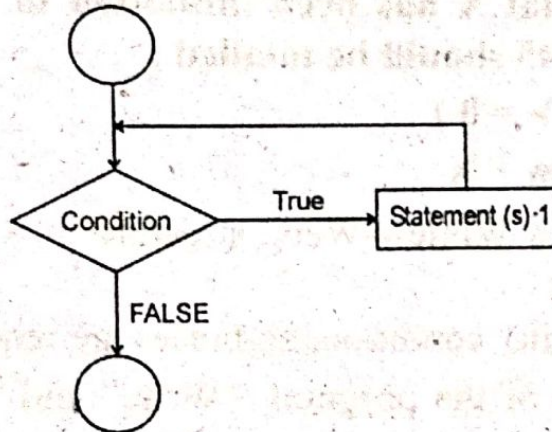
Ans

Syntax of this structure is:

If (condition) Then VB-Statement

(iv) Make a flowchart of while loop in VB.

Ans



(v) Trace the error :

if x = 6

x = 3

End if

Ans

In the above syntax:

The keyword Then must be on the same line as the keyword If.

(vi) List advantages of an array.

Ans

Following are the advantages of an array:

1. Size of the array list is not fixed.
2. Elements can be inserted at or deleted from a particular position.
3. Array list class has many methods to manipulate the stored projects.
4. Array list can hold multiple null elements and duplicate elements.

(vii) How many times does the following loop execute:

For 1 to 10

NEXT

Ans The above loop will execute 10 times.

(viii) Differentiate between outer and inner loop in VB.

Ans The outer loop creates a string for every iteration of the loop. The inner loop decrements a loop counter variable for every iteration of the loop.

(ix) Find the errors in the following code :

Assume that X has been initialized to 45. The value from 0 to 45 should be totalled :

While (X >= 0)

Sum = Sum + X

Ans The above is While---Wend structure in which following errors are occurred:

1. In the 'While' condition, no braces are required.
2. In the end of the program, "Wend" and "End Sub" are not placed.

SECTION-II

(MS ACCESS)

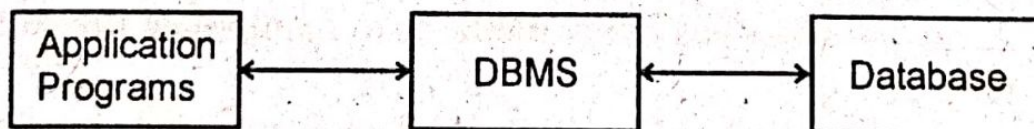
Note: Attempt any ONE (1) question.

5. Briefly describe the four advantages and four disadvantages of database management system. (8)

Ans **Advantages of Database Systems**

1. **Data Independence:**

Application programs are not aware of the physical implementation of the data sets. The DBMS sits in between the application programs and the actual data sets that make up the database.



2. **Support Complex Data Relationships:**

Fairly complex data structures can be designed which allow various ways to logically view or access the data. This complexity greatly enhances the ability of a designer to put data

"where it belongs", and provide a path to that data whenever needed.

3. Sophisticated Data Security Features:

Provide enhanced security mechanisms for access to data. Data base security mechanisms typically go much further in adding more extensive security features. If granted Read access to a file/table, the user may see each record in the file, and every data field it contains. Access intent of each application program (read, write, update, delete) can be specified explicitly. An application program's view of data records may be controlled to the field level.

4. Data Base Backup / Recovery:

Provide sophisticated backup / recovery mechanism.

Backup / Recovery capabilities often distinguish between true DBMS and a software package that only claims this facility. A DBMS has a logging or recording mechanism that captures information on changes to data within a data base. In case of data base recovery, a utility within the DBMS rebuilds it by using a backup copy of the data and log of changes as input.

Disadvantages of Database Systems

1. Require additional System Overhead:

Additional overhead is required to access data, in case of doing some simple jobs; like reading and processing a tape file, which might take a little time and resources to do the job. If we have to do it on DBMS, it is like "requiring too much to do too little".

2. Additional Training required for Training of Staff:

Application programmers required a sort of precise training to code efficient programs that will run under a DBMS. There is a possibility that in adequate training or experience of application development staff will lead the creation of grossly inefficient database calls. Quite often, the problem might not be found until the program reaches production status. The typical example is that of using proper and improper indexes for accessing the database.

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3. Problems can multiply in selecting a wrong type of Dbase Environment:

A later change in structure, forced by changing requirements, can be costly in terms of conversion and testing of existing programs. Hierarchical data base systems are, in particular, more sensitive than network or relational systems towards this kind of problem, and implementing changes costs a great deal. On the other hand, doing these changes on relational data bases are fairly easy and less costly.

4. Data must be considered a corporate resource:

The data in a company's data base no longer belong to one organization alone. True, one organization normally has the primary responsibility for creating a data base. However, as data base systems mature, more companies or organizations can share the same data across applications.

6. What is table? Write down six characteristics of table. (2,6)

Ans Table:

The table is the fundamental concept of relational databases. It is also called relation. It is the foundation of every Relational Database Management System is a database object called table.

Characteristics of Tables:

The tables of a relational database have following characteristics:

1. Each cell of the table contains only one value.
2. Each column has a distinct name, which is the name of the attribute (field) it represents.
3. The order of the columns is immaterial.
4. Each row represents a record.
5. Each row is distinct; there are no duplicate rows.
6. The order of rows is immaterial.

SECTION-III

Note: Attempt any TWO (2) descriptive answers (either from "C-Language" or from "Visual Basic") of the following questions.

(C-Language)

7. What necessary steps are taken to prepare a C program for execution? Explain in detail. (8)

Ans Steps:

C program are prepared to solve different type of problems. There are following steps taken to prepare a C program for execution:

- Creating and Editing
- Saving
- Compiling
- Linking
- Loading
- Running

Creating and Editing a C Program in C Programming Language Compiler:

Writing or creating and editing source program is a first step in c language. Source code is written in c programming language according to the type of problem or requirement, in any text editor.

Saving C Program in C++ Programming Language:

Source code is saved on the secondary storage. Source code is saved as text file. The extension of file must be ".c". Example the file name is "learn c programming language.c".

Compiling C program in C Programming Language:

Computer does not understand c programming language. It understands only 0 and 1 means machine language. So c programming language code is converted into machine language. The process of converting source code in to machine code is called compiling. Compiler is a program that compiles source code. Compiler also detects errors in source program. If

compiling is successful source program is converted into object program. Object program is saved on disk. The extension of file is ".obj"

Linking in C programming Language:

There are many built in functions available in c programming language. These functions are also called library functions. These functions are stored in different header files.

Loading program:

The process of transferring a program from secondary storage to main memory for execution is called loading a program. A program called loader does loading.

Executing program:

Execution is the last step. In this step program starts execution. Its instructions start working and output of the program display on the screen.

-
8. Write a program to input a character through keyboard and check whether it is vowel or consonant. (8)
-

Ans

```
#include <stdio.h>
void main (void)
{
    char ch;
    printf ("Enter an alphabet");
    ch = getch();
    switch (ch)
    {
        case 'a':
        case 'A':
            printf ("It's a vowel");
            break;
        case 'e':
        case 'E':
            printf ("It's a vowel");
            break;
        case 'i':
        case 'I':
            printf ("It's a vowel");
            break;
        case 'o':
        case 'O':
```



```

        printf ("It's a vowel");
        break;
    case 'u':
    case 'U':
        printf ("It's a vowel");
        break;
    default:
        printf ("It is not a vowel");
        break;

```

9. Define nested loop. Write its syntax. Explain its working with the help of example. (2,2,4)

Ans **NESTED LOOP:**

Nested loop means a loop inside the body of another loop. Nesting can be done up to any level. But, as the level of nesting increases, the complexity of the nested loop also increases. There is no restriction on the type of loops (while, do-while, or for) that may be placed in the body of other loops. For example, we can place one or more while or do-while loops in the body of for loop. Similarly, one or more for loops can be placed in the body of while or do-while loop.

Example:

A program that will print asterisks (*) according to the pattern show in the following fig.

```

*****
*****
*****
****
***
**
*

```

Fig. Asterisks pattern.

```

#include <stdio.h>
void main (void)
{
    int inner;
    for (int outer = 7; outer >= 1; outer --)
    {
        inner = 1;
        while (inner <= outer)
        {
            printf (" * ");
            inner++;
        }
    }
}

```



```
}  
printf (“\n”);  
}
```

In this program, a while loop is used inside the body of for loop, which shows a nested loop. The outer loop is controlled by the loop control variable *i.e.*, outer. The outer loop is executed seven times. For each iteration of the outer loop, the inner loop executes until the value of the inner loop control variable *i.e.*, inner is less than or equal to the value of the variable outer. It should be noted that each time a new iteration for the outer loop starts, the variables used in the inner loop are re-initialized and re-processed.

OR

(Visual Basic)

7. What is meant by IDE in Visual Basic? Describe different components or elements of IDE. (8)

Ans **Visual Basic IDE:**

Visual Basic is both a tool and a language. The tool is the Visual Basic Integrated Development Environment (IDE). It provides facilities for writing, debugging and running programs in one environment. It is used to develop the Graphic User Interface (GUI) of the program. The language is used to write the code that executes behind the GUI of the program.

Visual Components of Visual Basic IDE:

Figure below shows the Visual Basic IDE for Standard EXE project. The Visual Basic IDE consists of various components and the following windows:

- Form Window
- Form Layout Window
- Properties Window
- Project Explorer Window
- Toolbox

Form Window:

Form window contains a form named Form1. The Graphical User Interface (GUI) of the Visual Basic program is created and displayed on this window. The GUI of a program consists of several buttons, text boxes, etc. The user provides input through various controls on the Form and the output of the program is also displayed on the Form.

Form Layout Window:

Form Layout window is used to specify the position of the program window (or form) on the computer screen when the program is executed. It consists of an image representing the

computer screen and a form. The position of the active form relative to the computer screen is shown.

The position of the form on the screen can be adjusted by dragging the form with the mouse to the desired position.

Properties Window:

The properties of an object in Visual Basic are its attributes such as size, color, position, appearance, font, etc. Properties window displays these attributes of the selected object.

Each control in Visual Basic has a unique set of properties. Some properties such as height, width, color, etc. are common to all controls, while other properties are unique to each object. When an object or a control is selected, its respective properties appear in the Properties Window.

Properties window contains two tabs: Alphabetic and Categorized. When Alphabetic tab is selected, the properties are listed in alphabetic order. This is the default setting.

Similarly, when Categorized tab is selected, the properties are listed as groups or categories. Thus all properties related to fonts are combined in one category called Font and are listed under it. Similarly, the properties relating to appearance of the control are listed under category Appearance.

The Scrollbar at the left border of the Properties window can be used to display the properties by dragging it upwards or downwards. When a property is selected in the Properties window, its brief description is displayed at the bottom of the Properties window.

Project Explorer Window:

Project Explorer Window displays forms, modules, classes, etc. used in the project. This window is used to bring a particular component of the project into focus. For example, if a project uses three forms and any one of the forms is to be used, then this form is located in this window. A double-click on a form icon displays the form and brings it into focus in the IDE.

The Project window contains three buttons: **View Code**, **View Object** and **Toggle Folders**:

- View Code button displays the Code window for writing Visual Basic code.
- View Object button, when pressed, displays the selected object.
- Toggle Folders button is used to hide or show folders.

TOOLBOX:

Toolbox contains controls that are used on the form window to develop an application. Controls are GUI components such as buttons, check boxes, text boxes, etc. Toolbox contains most of the tools that are usually used in application programs created in Visual Basic. However, new

tools can also be added to the toolbox. Similarly, some extra tools are also available in Professional and Enterprise Editions of Visual Basic and these can also be added to the toolbox.

8. Write a program to input a character through keyboard and check whether it is vowel or consonant. (8)

Ans Function Test (Data As Range)
Select Case Data
Case "A", "E", "I", "O", "U"
Text = "Vowel"
Case Else
Text = "Consonant"
End Select
End Function

9. What is nested loop in Visual Basic? Write its syntax. Explain its working with the help of example. (8)

Ans To test multiple conditions, nested loop (IF----Then structure) is used:

The syntax for nested loop is:

```
If Condition Then
    Visual Basic Statement(s)
Else
    If Condition Then
        Visual Basic Statement(s)
    Else
        If Condition Then
            Visual Basic Statement(s)
        Else
            Visual Basic Statement(s)
        End If
    End If
End If
```

Example:

A code to input Marks obtained by a student and find out the Grade according to the following criteria:

If average is 90 or greater than 90, grade is A.

If average is 80 or greater than 80 and less than 90, grade is B.

If average is 70 or greater than 70 and less than 80 grade is C.

If average is less then 70 print Fail.

Dim a As Integer

a = Input Box ("Marks Obtained")

If a < 70 Then

MsgBox ("Fail")


```

Else If a < 80 Then
    MsgBox ("Grade = C")
Else If a < 90 Then
    MsgBox ("Grade = B")
Else
    MsgBox ("Grade = A")
End if

```

SECTION-IV

(Practical Part)

Note: Attempt any THREE (3) questions.

(A) Write the procedure for finding data in MS-Access. (5)

Ans Finding Data in Table:

1. Open the table in datasheet view.
2. Place the cursor in any record in the field that you want to search and select *Edit\Find...* from the menu bar.
3. Enter the value criteria in the *Find What:* box.
4. From the *Look In:* drop-down menu, define the area of the search by selecting the entire table or just the field in the table you placed your cursor in during step 2.
5. Select the matching criteria from *Match:* and click the *More >>* button for additional search parameters.
6. When all of the search criteria are set, click the *Find Next* button. If more than one records meet the criteria, keep clicking *Find Next* until you reach the desired record.

(B) Write the procedure to edit record through forms. (5)

Ans To edit records, place the cursor in the record that is to be edited and make the necessary changes. Use the arrow keys to move through the record grid. The previous, next, first, and last record buttons at the bottom of the datasheet are helpful in maneuvering through the datasheet.

(C) Write a program in C-language or VB that inputs distance in kilometers and converts into meters. (5)

Ans

```

#include <stdio . h>
void main (void)
{
    Double meter, kilometer;

```



```
// prompt the user to enter kilometers
printf ("Enter distance in kilometers>");
// take input
scanf ("%1 f", &kilometer);
meter = kilometer * 1000;
printf ("\n %1 f kilometers = %1 f meters",
kilometer, meter);
}
```

Here's the sample *output* of the program

(D) Write program in C-language or VB that displays first ten numbers and their sum using while loop. (5)

Ans

```
#include <stdio.h>
void main( )
{
    int num, sum;
    sum=0;
    num=1;
    while(num<=10)
    {
        sum=sum+num;
        num++;
    }
    printf("\nSum = %d ",sum);
}
```

(E) Write a program in C-language or VB that displays your board roll no. and class using function. (5)

Ans

```
#include<stdio.h>
void printdata(char clas[], long int rollno);
void main()
{
    long int rollno;
    char clas[30];
    printf("Enter your Board Roll No. ");
    scanf("%ld",&rollno);
    printf("Please enter your class ");
    scanf("%s",&clas);
    printdata(clas,rollno);
}

void printdata(char clas[], long int rollno)
{
    printf("\nYour Roll No = %ld",rollno);
    printf("\nYour Name is = %s", clas);
}
```